UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 66532

227th STREET

OVER THE

STRAIGHT RIVER

DISTRICT 6 - RICE COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 66532, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. Timber debris accumulations were observed at both piers, with heavy amounts at Pier 2. The channel bottom around the substructure units appeared to be in stable condition with no evidence of significant scour.

INSPECTION FINDINGS:

(A) The concrete of the piers was smooth and sound with no notable defects.

(B) A light accumulation of timber debris consisting of 8-inch-diameter and smaller branches was observed at the upstream nose of Pier 1 extending from the channel bottom to 1 foot below the waterline.

(C) A heavy accumulation of timber debris consisting of 2 feet in diameter and smaller logs and branches was observed at the upstream nose of Pier 2 extending from the channel bottom to 4 feet above the waterline.

RECOMMENDATIONS:

(A) Remove accumulations of timber debris at both piers to alleviate further accumulation, scour influence, and any excessive lateral force on the piers.

(B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 66532

Feature Crossed: Straight River

Feature Carried: 227th Street

Location: District 6 - Rice County

Bridge Description: The bridge superstructure consists of three spans of multiple precast concrete beams supporting a concrete deck. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers. The piers are comprised of steel H-pile bents encased in concrete. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer Diver: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 23, 2007

Weather Conditions: Sunny, 55 ºF

Underwater Visibility: 1.0 foot

Waterway Velocity: 3.0 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers each consist of a rectangular slender concrete shaft and a rectangular pier cap, both with rounded ends. The concrete shaft encases a single row of six steel H-piles, and runs from the cap into the channel bottom.

Maximum Water Depth at Substructure Inspected: Approximately 5.2 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 2.

Water Surface: The waterline was approximately 7.5 feet below reference.
Waterline Elevation = 1040.8.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 5

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code F/07

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

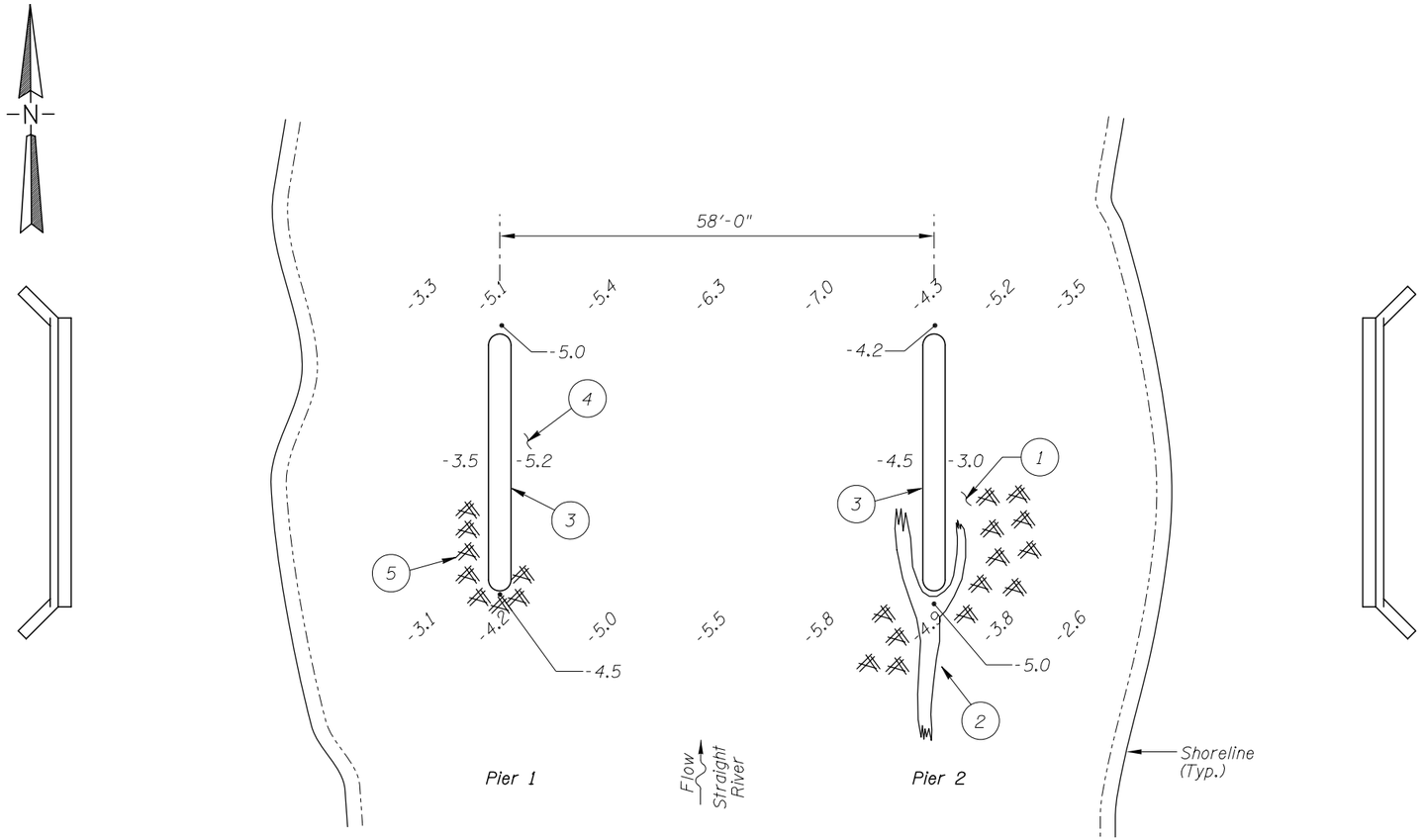
_____ Yes X No

Photograph 1. Overall View of Structure, Looking Northeast.

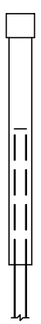
Photograph 2. View of Pier 1, Looking Southeast.

Photograph 3. View of Pier 2 and Timber Debris, Looking West.

Photograph 4. View of the Upstream End of Pier 2 and Timber Debris, Looking Southwest.



SOUNDING PLAN



TYPICAL END VIEW OF EACH PIER SECTION

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection, on October 23, 2007, the waterline was located approximately 7.5 feet below the bottom of pier cap on downstream end of Pier 2. This corresponds to a waterline elevation of 1040.8.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units as well as around the pier structures.

INSPECTION NOTES:

(1) Channel bottom consisted of sft silty infilling and organics with 6 inches of probe rod penetration. At the upstream nose, rock was reached 1 foot below the channel bottom. Also at the midpoint on the channel side, rock was reached at 1.5 feet below the channel bottom.

(2) Heavy debris 2 feet in diameter and smaller logs and branches was observed on the upstream side of Pier 2, extending from the channel bottom to 4 feet above the waterline.

(3) Concrete was smooth and sound on both piers.

(4) The channel bottom at Pier 1 consisted of firm rock and gravel with no probe rod penetration from the upstream nose to the midpoint, and sand silty infilling with 3 inches of probe rod penetration from the midpoint to the downstream nose.

(5) Light accumulation of timber debris consisting of 8 inch diameter and smaller branches was observed at the upstream nose of Pier 1 extending from 1 foot below the waterline to the channel bottom.

Legend

-0.4 Sounding Depth (10/23/07)

Timber Debris

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

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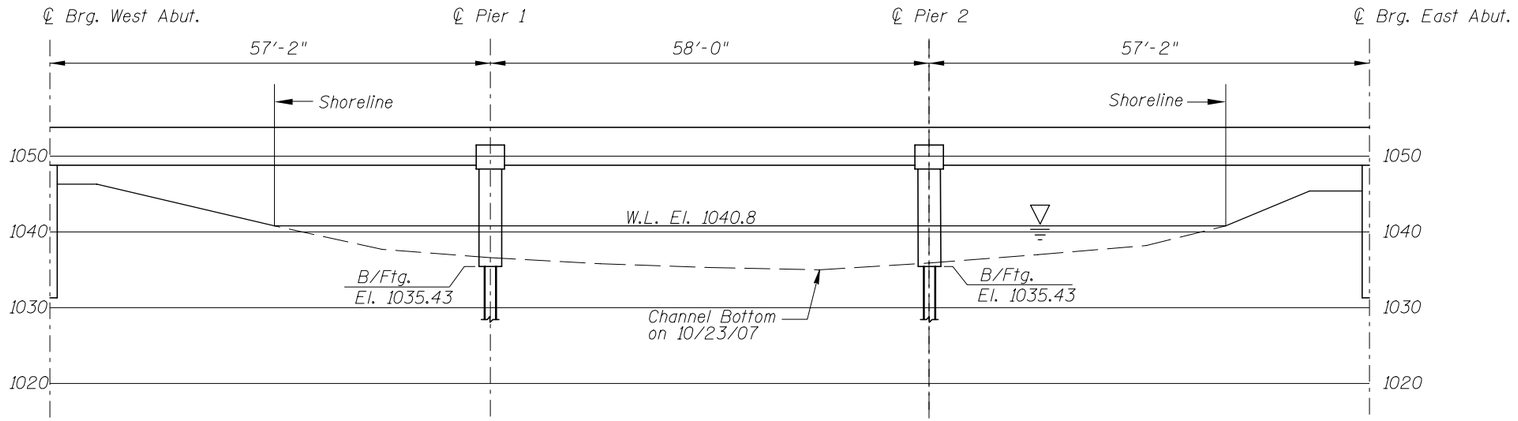
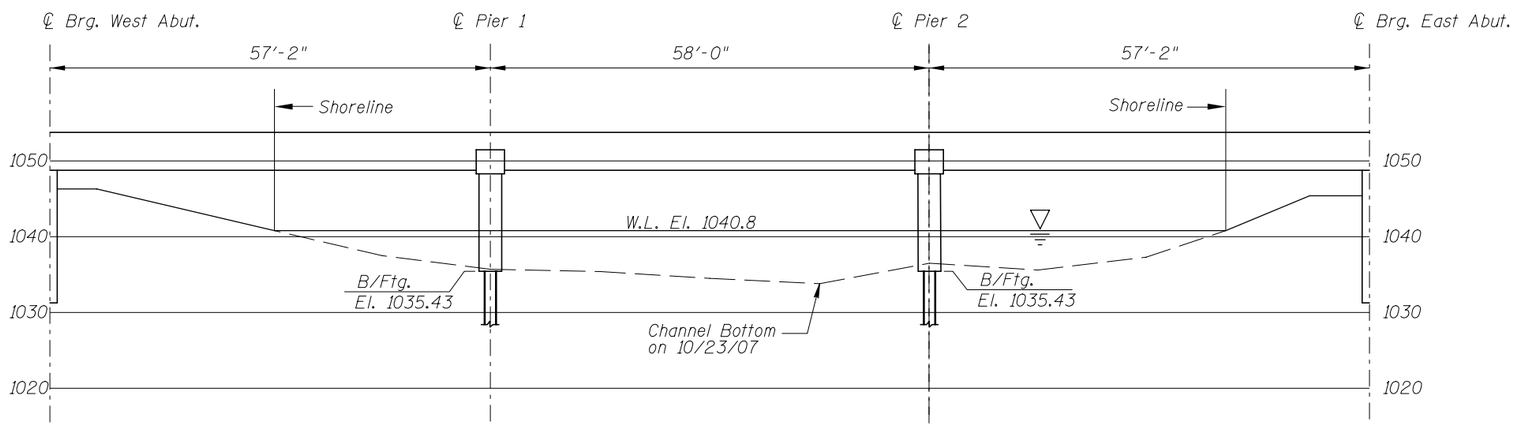
OVER THE SRTAIGHT RIVER
DISTRICT 6, RICE COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: LJ	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, Il. 60606 (312) 704-9300 www.collinsengr.com	Date: OCT, 2007
Checked By: VR		Scale: NTS
Code: 522166532		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

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UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: LJ	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT, 2007
Checked By: VR		Scale: 1"=20'
Code: 522166532		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 23, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.

BRIDGE NO: 66532 WEATHER: Sunny, 55 ºF

WATERWAY CROSSED: Straight River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER _____

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: Scuba, U/W Light, Probe Rod, Lead Line, Sounding Pole, Scraper, Camera

TIME IN WATER: 8:45 a.m.

TIME OUT OF WATER: 9:15 a.m.

WATERWAY DATA: VELOCITY 3.0 f.p.s.

VISIBILITY 1.0 feet

DEPTH 5.2 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the concrete of the piers was in good condition with no defects of structural significance observed. A light accumulation of timber debris consisting of 8-inch-diameter and smaller branches was observed at the upstream nose of Pier 1 extending from the channel bottom to 1 foot below the waterline. A heavy accumulation of timber debris consisting of 2 feet in diameter and smaller logs and branches was observed at the upstream nose of Pier 2 extending from the channel bottom to 4 feet above the waterline.

FURTHER ACTION NEEDED: X YES _____ NO

Remove accumulations of timber debris at both piers to alleviate further accumulation, scour influence, and any excessive lateral force on the piers.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 66532
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED Straight River

INSPECTION DATE October 23, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	5.2’	N	7	N	9	N	7	8	8	8	7	7	7	N	N	N	N	N
	Pier 2	5.0’	N	7	N	9	N	7	8	8	8	5	5	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the piers was in good condition with no defects of structural significance observed. A light accumulation of timber debris consisting of 8-inch-diameter and smaller branches was observed at the upstream nose of Pier 1 extending from the channel bottom to 1 foot below the waterline. A heavy accumulation of timber debris consisting of 2 feet in diameter and smaller logs and branches was observed at the upstream nose of Pier 2 extending from the channel bottom to 4 feet above the waterline.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.